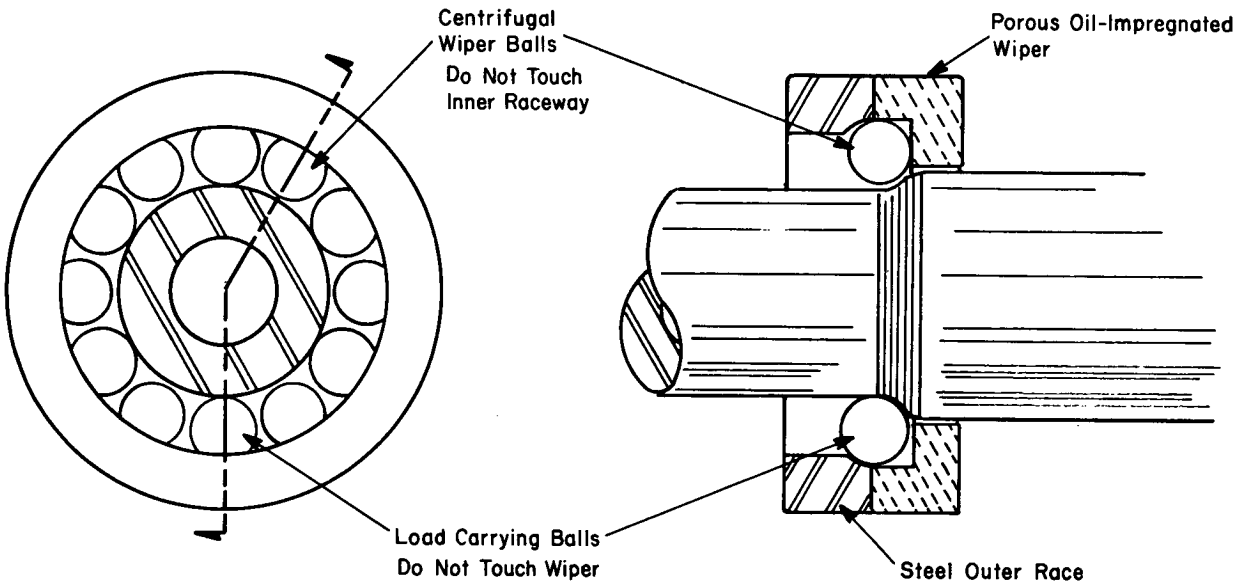
NASA TECH BRIEF

Manned Spacecraft Center

New Full-Complement Ball Bearing Lubrication Technique



Note: Load Carrying Ball Dia. > Wiper Ball Dia.

Sketch of Centrifugal Wiper Ball Bearing Design

The problem:

To lubricate ball bearings without using conventional porous retainer rings or spring assisted wiper rings.

The solution:

Undersize spacer balls rub against an oil impregnated wiper. The lubricant is picked up by the undersize balls and transmitted to the load carrying balls and the raceways.

How it's done:

A full ball complement is used, with the diameter of alternate balls being undersize. As a result of centrifugal force, the wiper ball will roll against the outer race and surface of the wiper. The load carrying balls never contact the impregnated wiper, but are lubricated by contacts with the smaller wiper balls. Any excess oil is reabsorbed by the wiper due to the centrifugal force on the liquid. The wiper is attached to the outer race and rotates with it. The inner race remains stationary while the balls rotate about the bearing axis at a lower angular

(continued overleaf)

velocity than the outer race and wiper. Geometry of the wiper permits easier assembly and higher operating speeds than is possible with a retainer. Inaccuracies which occur in a spring loaded wiper bearing appear to have been eliminated with this design.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
Manned Spacecraft Center, Code JM7
Houston, Texas 77058
Reference: TSP72-10174

Patent status:

No patent action is contemplated by NASA.

Source: Bertram Rockower
Massachusetts Institute of Technology
under contract to
Manned Spacecraft Center
(MSC-13850)